CLAIMS

What is claimed is:

1. An imaging polarimeter sensor, comprising:

an achromatic beam-splitting polarizer that receives a polychromatic image beam of a scene and simultaneously produces a first polarized polychromatic image beam and a second polarized polychromatic image beam, wherein the second polarized polychromatic image beam is of a different polarization than the first polarized polychromatic image beam and is angularly separated from the first polarized polychromatic image beam; and

an imaging detector that receives the first polarized polychromatic image beam and the second polarized polychromatic image beam and produces an output image signal responsive to the first polarized polychromatic image beam and the second polarized polychromatic image beam.

2. The imaging polarimeter sensor of claim 1, wherein the achromatic beam-splitting polarizer comprises

a Wollaston prism through which the polychromatic image beam passes, and

at least one additional prism through which the polychromatic image beam passes either before or after it passes through the Wollaston prism.

3. The imaging polarimeter sensor of claim 1, wherein the achromatic beam-splitting polarizer comprises

a Wollaston prism through which the polychromatic image beam passes, and

at least one grating through which the polychromatic image beam passes either before or after it passes through the Wollaston prism.

4. The imaging polarimeter sensor of claim 1, wherein the achromatic beam-splitting polarizer comprises

a Wollaston prism through which the polychromatic image beam passes, and

at least one blazed grating through which the polychromatic image beam passes either before or after it passes through the Wollaston prism.

5. The imaging polarimeter sensor of claim 1, wherein the achromatic beam-splitting polarizer comprises

a Wollaston prism through which the polychromatic image beam passes,

a first grating through which the polychromatic image beam passes before it passes through the Wollaston prism, and

a second grating through which the polychromatic image beam passes after it passes through the Wollaston prism.

6. The imaging polarimeter sensor of claim 1, wherein the achromatic beam-splitting polarizer comprises

a Wollaston prism through which the polychromatic image beam passes,

a first blazed grating through which the polychromatic image beam passes before it passes through the Wollaston prism, and

a second blazed grating through which the polychromatic image beam passes after it passes through the Wollaston prism.

7. The imaging polarimeter sensor of claim 1, further including

a half-wavelength plate through which the polychromatic image beam passes before it passes through the achromatic beam-splitting polarizer.

8. The imaging polarimeter sensor of claim 1, further including

a telescope that receives the polychromatic image beam and directs it into the achromatic beam-splitting polarizer.

9. The imaging polarimeter sensor of claim 1, further including

an imaging optics system that images the first polarized polychromatic image beam and the second polarized polychromatic image beam onto the

imaging detector.

10. The imaging polarimeter sensor of claim 1, wherein the first polarized polychromatic image beam is imaged onto a first portion of the imaging detector, and the second polarized polychromatic image beam is imaged onto a second portion of the imaging detector spatially separated from the first portion of the imaging detector.

11. The imaging polarimeter sensor of claim 1, wherein the first polarized polychromatic image beam and the second polarized polychromatic image beam are interlineated on the imaging detector.

12. An imaging polarimeter sensor, comprising:

an achromatic beam-splitting polarizer through which a polychromatic image beam from a scene passes, wherein the achromatic beam-splitting polarizer simultaneously produces a first polarized polychromatic image beam and a second polarized polychromatic image beam, and wherein the second polarized polychromatic image beam is of a different polarization than the first polarized polychromatic image beam and is angularly separated from the first polarized polychromatic image beam, wherein the achromatic beam-splitting polarizer comprises

a Wollaston prism, and

at least one grating through which the polychromatic image beam passes either before or after it passes through the Wollaston prism;

an imaging detector that receives the first polarized polychromatic image beam and the second polarized polychromatic image beam and produces an output image signal responsive to the first polarized polychromatic image beam and to the second polarized polychromatic image beam; and

an imaging optics system that images the first polarized polychromatic image beam and the second polarized polychromatic image beam onto the imaging detector.

13. The imaging polarimeter sensor of claim 12, further including a half-wavelength plate through which the polychromatic image beam passes before it passes through the achromatic beam-splitting polarizer.

14. The imaging polarimeter sensor of claim 12, further including an objective that receives the polychromatic image beam and directs it into the achromatic beam-splitting polarizer.

15. The imaging polarimeter sensor of claim 12, wherein the first polarized polychromatic image beam is imaged onto a first portion of the imaging detector, and the second polarized polychromatic image beam is imaged onto a second portion of the imaging detector spatially separated from the first portion of the imaging detector.

16. The imaging polarimeter sensor of claim 12, wherein the first polarized polychromatic image beam and the second polarized polychromatic image beam are interlineated on the imaging detector.